ARAC ESHWG Report 25.1362

1 - What is underlying safety issue to be addressed by the FAR/JAR?

JAR 25X1362 addresses electrical supplies for emergency conditions. This JAR and associated ACJ was created to ensure that electrical supplies are maintained to emergency services (such as fuel and hydraulic shut-off valves) so that these may be closed after the main power sources have been switched off by the flight crew.

JAR 25X1362 was introduced at JAR-25 Change 3 (effective 31.12.76). There is no FAR 25 equivalent.

This requirement was considered necessary concerning the provision of an adequate electrical supply after an emergency landing or ditching.
JAR 25X1362 was further modified at JAR-25 Change 14 (effective 27.05.94) as a result of NPA 25DF-191 by introducing new ACJ material to clarify the intent of requirement for the provision of electrical supplies for such emergency conditions.

2 - What are the current FAR and JAR standards relative to this subject?

Current FAR text:

None

Current JAR text:

JAR 25X1362 Electrical supplies for emergency conditions

A suitable supply must be maintained to those services which are required, either by this JAR-25 (e.g. JAR 25.1195) or in order that emergency drills may be carried out, after an emergency landing or ditching. The circuits to these services must be so designed and protected that the risk of their causing a fire, under these conditions, is minimised. (See ACJ 25X1362.)

2a – If no FAR or JAR standard exists, what means have been used to ensure this safety issue is addressed?

No equivalent standard exists in FAR. Partial coverage is provided by FARs 25.1189, 25.1195, 25.1309 and 25.1585.

3 - What are the differences in the FAA and JAA standards or policy and what do these differences result in?:

Application of JAA standards has sometimes resulted in different designs for the powering of appropriate emergency services. There is no FAR equivalent rule.

4 - What, if any, are the differences in the current means of compliance?

For JAR 25X1362, a compliance method is given by ACJ 25X1362 as follows:

ACJ 25X1362
Electrical Supplies for Emergency Conditions (Interpretative Material)
See JAR 25X1362
1 Consideration should be given to the possibility that all electrical power sources are likely to be disconnected or isolated by the flight crew just prior to, or during, an emergency (or crash) landing, to prevent them becoming a source of ignition.
2 In order that it shall not be necessary to reconnect power sources to enable a power supply to be provided to the emergency services, it would be acceptable to power such services from a 'hot' battery bus. These circuits would need to be so protected that the risk of their causing a fire under these conditions is minimised.
3 The emergency services which may require such a supply should include fuel and hydraulic shut-off valves, engine and APU fire extinguisher systems. (See also JAR 25.1189 and 25.1195).

ADDITIONAL JAA INTERPRETATION

Is a specific battery required to power the emergency services?
Application of 25.561(b)(3) loads to the emergency services and supplies?

1. JAR 25X1362 by itself has no structural implications (see points 3 and 4).
JAR 25X1362 is requesting the provision of electrical power, after an emergency landing, ditching or crash, to those services which may be required after such an event.

2. The solution implied by the ACJ 25X1362 paragraph 2 is to power the emergency services from a 'hot' battery bus. This means that the aeroplane battery (batteries) can be used for that purpose. A specific dedicated battery is not required, nor it is forbidden.

3. Aeroplane battery (batteries) would have to meet 25.561(b) loads, if they are likely to cause injury to occupants or create an additional hazard to the aeroplane if they break loose.

4. The circuits to the emergency services should be designed and installed such that the risk of damaging them during the emergency landing is minimised.

5 – What is the proposed action?

Due to the fact there is no existing FAR 25.1362 and as there has been inconsistent application of the JAR, the ESHWG recommends that the JAR 25X1362 be revised and a new FAR/JAR 25.1362 be created as detailed in paragraph 6 below. The ACJ will also be revised and adopted as an AC/ACJ by the FAA/JAA, as detailed in paragraph 13 below. This proposed rule and advisory material will provide flexibility by allowing either an appropriate AFM procedure and/or design implementation to achieve compliance.

6 – What should the harmonized standard be?

FAR/JAR 25.1362 Electrical supplies for emergency conditions

A suitable supply must be provided to those services which are required, in order that emergency procedures may be carried out, after an emergency landing or ditching. The circuits for these

services must be so designed, protected and installed such that the risk of their causing a fire, under these conditions, is minimised. (For JAR see ACJ 25.1362) (Note: FAR will not reference the AC)

7 – How does this proposed standard address the underlying safety issue (identified under #1)?

The underlying safety issue is to provide appropriate electrical power supplies for emergency conditions. This proposed standard ensures flexibility by allowing either an appropriate AFM procedure and/or design implementation to achieve compliance.

8 - Relative to the current FAR, does the proposed standard increase, decrease, or maintain the same level of safety? Explain.

The proposed standard increases the level of safety by focusing on appropriate methods to ensure that electrical power is provided for emergency services during emergency landing or ditching conditions.

9 - Relative to current industry practice, does the proposed standard increase, decrease, or maintain the same level of safety? Explain.

The proposed standard maintains the level of safety and is in line with current industry practice.

10 - What other options have been considered and why were they not selected?:

Other options considered were adoption of the existing JAR and ACJ, and deletion of the existing JAR and ACJ. However, for the reasons stated above, a revision to the rule was adopted to provide greater flexibility for compliance.

11 - Who would be affected by the proposed change?

As the proposal is in line with current design practices, the effect is considered to be minimal for aircraft operators and manufacturers affected by this change.

12 - To ensure harmonization, what current advisory material (e.g., ACJ, AMJ, AC, policy letters) needs to be included in the rule text or preamble?

None.

13 - Is existing FAA advisory material adequate? If not, what advisory material should be adopted?

There is no FAA Advisory Material.

The following is proposed as advisory material as derived from the existing ACJ to 25X1362:

AC/ACJ 25.1362
Electrical Supplies for Emergency Conditions
See FAR/JAR 25.1362

1 The emergency services which may require a supply include fuel shut-off valves, hydraulic shut-off valves and engine / APU fire extinguisher systems.

2 An appropriate design and/or unambiguous AFM procedures should be provided in order to prevent disconnection of the electrical supply to the required services before the emergency procedures are fully completed.

14 - How does the proposed standard compare to the current ICAO standard?

This proposal is in line with ICAO Annex 8 Chapter 8, Electrical Systems.

15 - Does the proposed standard affect other HWG's?

No.

16 - What is the cost impact of complying with the proposed standard

As the proposal is in line with current industry practices, the cost impact will be negligible.

17. - If advisory or interpretive material is to be submitted, document the advisory or interpretive guidelines. If disagreement exists, document the disagreement.

The proposed AC/ACJ is specified in 13 above.

18.- -Does the HWG wish to answer any supplementary questions specific to this project?

No.

19. – Does the HWG want to review the draft NPRM at "Phase 4" prior to publication in the Federal Register?

Yes.

20– In light of the information provided in this report, does the HWG consider that the "Fast Track" process is appropriate for this rulemaking project, or is the project too complex or controversial for the Fast Track Process? Explain.

The ESHWG considers that the fast track harmonization process is appropriate for this rule.